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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,449	01/27/2004	David John Bishop	56-3-2	3213

7590 01/05/2006

EXAMINER
KLEIN, GABRIEL J

ART UNIT	PAPER NUMBER
3641	

John A. Caccuro
9 Ladwood Drive
Holmdel, NJ 07733

DATE MAILED: 01/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/766,449	BISHOP ET AL.	
	Examiner	Art Unit	
	Gabriel J. Klein	3641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-14 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-14 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 02 July 2004 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

Applicant has not given a post office address anywhere in the application papers as required by 37 CFR 1.33(a), which was in effect at the time of filing of the oath or declaration. A statement over applicant's signature providing a complete post office address is required.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "101" and "111" have both been used to designate the laser. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "117" drawn to the "data input leads". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid

abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3, 5, 6, 10, and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Soltz et al (5204490).

In reference to claim 1, Soltz et al discloses a fuse apparatus, capable of igniting and explosive charge of a fired ordnance, comprising:

- a laser having a controllable optical power level (figure 1, element 16, and column 2, lines 18-21)
- an optical switch device having a first position capable of preventing a laser optical signal from impinging on the explosive charge when the fuse apparatus is in a pre-firing state and, in response to an arming signal, establishing a second position capable of unblocking the laser optical

signal to enable it to impinge the explosive charge (figure 1, element 18, and column 2, paragraph 4); and

- a control unit capable of sending an arming signal to the optical switch device, determining when the ordnance has been fired (since said controller is capable of receiving an input command, e.g. from an accelerometer) , and further capable of increasing the laser power level to a level that detonates said explosive charge (figure 1, element 14).

In reference to claim 3, Soltz et al discloses an optical detector (figure 1, element 24) capable of detecting an optical signal from the laser; wherein the optical switch device directs the laser signal to the optical detector during a pre-firing state (column 2, paragraph 2); and wherein the control unit is responsive to a first signal from the optical detector and subsequently capable of verifying that the optical switch device is in the pre-firing state, and further capable of setting the laser optical signal to a low power level and preventing the firing of said ordnance.

In reference to claims 5 and 6, Soltz et al discloses an ignitor located in front of the explosive charge and ignited by the higher laser power level thereby causing detonation of the explosive charge (figure 1, element 22, and column 2, lines 9-13).

In reference to claim 10, Soltz et al discloses that a lens is used to focus the laser optical signal onto the ignitor (figure 4, element 74). It should be appreciated that lenses of varied size are widely used in the art and that it is common knowledge to use a micro size lens.

In reference to claim 12, Soltz et al discloses that said control unit receives fire-control programs and/or data from an external source (column 2, paragraph 3).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6,10, 12, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soltz et al (5204490) in view of Robinson (6321654).

Soltz et al discloses the claimed invention except:

Soltz et al does not explicitly disclose:

- an accelerometer capable of detecting that the ordnance has been fired, and wherein the control unit is responsive to an accelerometer signal; or
- a position sensor capable of detecting the position of the optical switch; wherein the control unit is responsive to a signal from the position detector that the optical switch device is in the pre-firing state in order to confirm a safe switch position prior to firing.

Robinson discloses a microelectromechanical systems (MEMS) device for use with a fuse apparatus, **capable of communication with a controller**, comprising:

- an accelerometer capable of detecting that the ordnance has been fired (column 13, line 25) to provide launch sensing means to ensure an ordnance has been fired before becoming fully armed;

- an optical switch device having a first position capable of preventing a laser optical signal from impinging on the explosive charge when the fuse apparatus is in a pre-firing state and, in response to an arming signal, establishing a second position capable of unblocking the laser optical signal to enable it to impinge the explosive charge (column 8, paragraph 5); and
- a position sensor capable of detecting the position of the optical switch (figure 10C, element 84) to provide a signal to the controller indicating that the optical switch is in the correct position for pre-firing or firing conditions.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify (including the modification or replacement of the optical switch) the fuse apparatus as taught by Soltz et al, with the MEMS device as taught by Robinson, since such a modification would provide the fuse apparatus with the MEMS device to provide launch sensing means to ensure an ordnance has been fired before becoming fully armed and to provide a signal to the controller indicating that the optical switch is in the correct position for pre-firing or firing conditions. Further, such a modification provides size reduction of the fuse apparatus allowing for weight reduction and increased payload capacity for an ordnance device.

Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soltz et al in view of Yang et al (3812783). Soltz et al discloses the claimed invention except for the RNT foil and the shock wave inducing layer of said RNT foil. Yang et al teaches

that it is known to use a metallic foil as a primer charge (activated by laser and encapsulated in glass) as set forth in column 3, lines 34-54, to provide a primer charge that is insensitive to stray electrical/static-electrical signals so as to avoid accidental detonation. The metallic foil as taught by Yang et al, upon vaporization, "creates a rapidly expanding plasma", and therefore a shock wave (column 3, last paragraph-top of column 4). This means that the foil as taught by Yang et al must inherently include a shock wave inducing layer. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the fuse apparatus as taught by Soltz et al, with the metallic foil as taught by Yang et al, since such a modification would provide the fuse apparatus with the metallic foil for providing a primer charge that is insensitive to stray electrical/static-electrical signals so as to avoid accidental detonation. It should be appreciated that the definition of "encapsulate" as provided by Websters II Dictionary is: "To enclose or become enclosed in or as if in a capsule", where "enclose" is defined as: "To surround on all sides".

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soltz in view of Josse (5052300). Soltz et al discloses the claimed invention but does not explicitly disclose a microlens. Josse teaches that it is known to use a microlens, as set forth in the abstract, to provide means for focusing a laser beam onto a primer charger to ensure detonation. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the fuse apparatus as taught by Soltz et al, with the microlens as taught by Josse, since such a modification would provide the

fuse apparatus with the microlens for providing means for focusing a laser beam onto a primer charger to ensure detonation using a lightweight lens.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soltz et al in view of *In re Karlson*. Soltz et al discloses the claimed invention except that Soltz et al discloses the use of a primer charge (initiator). It would have been obvious to one having ordinary skill in the art at the time the invention was made to omit the primer charge, since it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art. *In re Karlson,* 136 USPQ 184.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soltz et al in view of Titus (4694752). Soltz et al discloses the claimed invention except for a spin detector. Titus teaches that it is known to use a spin detector as set forth in column 2, paragraph 2, to provide a signal to a control unit indicating an ordnance has been launched. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the fuse apparatus as taught by Soltz et al, with the spin detector as taught by Titus, since such a modification would provide the fuse apparatus with the spin detector for providing an input command to the controller indicating that said ordnance has been fired.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gabriel J. Klein whose telephone number is 571-272-

8229. The examiner can normally be reached on Monday through Friday 7:15 am to 3:45 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Carone can be reached on 571-272-6873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GJK

Mike Carone
Supervisory Patent Examiner